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24. A flow regulator, comprising:
a membrane having at least one hole;
a bottom layer; and
a fluid pathway;

10 the membrane being positioned above the bottom layer,
the fluid pathway being defined from above the membrane
through the hole and along the bottom layer on the side
facing the membrane, wherein flow through the hole
causes the membrane to deflect and engage against at
15 least one portion of the bottom layer thereby impeding
the fluid pathway.

25. A flow regulator according to claim 24, wherein the
side of the bottom layer facing the membrane further
20 comprises at least one channel which constitutes a part
of the fluid pathway, the first end of the channel being
in connection with an outlet port, wherein flow through
the hole causes the membrane to deflect and engage
against at least one portion of the bottom layer thereby
25 forcing the fluid in this portion to flow only in the
channel.

26. A flow regulator according to claim 25, wherein the
shape and length of the channel are so designed that an
30 increase of pressure generates an increase of the
contact area between the membrane and the bottom layer,
thereby defining an additional segment to the channel
where fluid is confined, said configuration allowing a
proper adjustment of the flow versus pressure
35 characteristics.

27. A flow regulator according to claim 26, wherein the

section of the channel is constant.

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5 28. A flow regulator according to claim 26, wherein the shape and length of the channel are so designed that the fluid resistance is proportional to the pressure, implying thereby a flow rate independent of the pressure.

10 29. A flow regulator according to claim 27 or 28, wherein the channel is a spiral shaped groove.

15 30. A flow regulator according to any of claims 24 to 29, wherein the membrane further includes means for sensing the deflection of the membrane.

31. A flow regulator according to any of claims 24 to 30, wherein the fluid pathway is obstructed when the membrane has reached a predetermined degree of deflection.
